Biospheric Sciences Branch Highlights
Code 614.4
March - April 2007

- SCIENCE POLICY AND TEAM MEETINGS, WORKSHOPS

** Biospheric Sciences Branch personnel participate in Symposium in Davos, Switzerland

Dr. Jon Ranson and Dr. Alexei Lyapustin (both Code 614.4) participated in the 10th "International Symposium on Physical Measurements and Signatures in Remote Sensing" on March 12-14 in Davos, Switzerland. Ranson presented a paper on the use of radar for forest structure and chaired a session on Advanced Concepts and Lidar. Lyapustin gave a presentation on the new atmospheric correction algorithm developed for MODIS: "MAIAC - Multi-Angle Implementation of Atmospheric Correction" by A. Lyapustin and Y. Wang.

** Branch Scientists attend second meeting of North American Protected Areas

Jim Irons (Code 614.4) and Eric Brown de Colstoun (SSAI/Code 614.4) attended the second North American Network for Remote Sensing Park Ecological Condition (NARSEC) workshop in Santa Fe, NM, March 6-8, co-sponsored by NASA, the U.S. National Park Service, the Parks Canada Agency (PCA) and the Canadian Center for Remote Sensing. NARSEC was established to promote and facilitate the use of remotely sensed data for monitoring and managing national parks and other protected areas across North America, including Mexico. (http://science.nature.nps.gov/im/monitor/narsec/narsec_home.htm)

Representatives from multiple international land management agencies, including NPS, PCA, the U.S. Forest Service, USGS, the Bureau of Land Management, and CONABIO (Comision Nacional para el conocimiento y uso de la biodiversidad (MEX)) discussed the state-of-the-art in remote sensing techniques and ecological metrics to aid park management decisions and improve land stewardship. Dr. Irons presented the status of the Landsat Data Continuity Mission (LDCM), and Dr. Brown de Colstoun presented the Landsat surface reflectance and forest disturbance products being made available for North America by the Landsat Ecosystem Disturbance Adaptive Processing System (LEDAPS) at GSFC.
(http://ledaps.nascom.nasa.gov/ledaps/ledaps_NorthAmerica.html)

** Anyamba invited to present at the American Mosquito Control Association

Assaf Anyamba (614.4, GEST) was invited to present on "Remote Sensing: Where we've been, where we're going" at the American Mosquito Control Association (AMCA) 73rd Annual Meeting April 1 - 5, 2007, Orlando, Florida. The presentation summarized the history and application of remote sensing in vector ecology and disease outbreak studies.

** Landsat Presentations at the NASA Land-Cover and Land-Use Change Science Team Meeting

Jim Irons and Jeff Masek, LDCM Project Scientist and Deputy Project Scientist, gave presentations during the NASA Land-Cover and Land-Use Change Science Team Meeting held at the University of Maryland University College Inn and Conference Center on April 4. Irons presented the status of the LDCM and related activities. Masek gave the Team a briefing on the Mid-Decadal Global Land Survey.

- FUNDED RESEARCH

** Field Measurement mission in Kenya

Assaf Anyamba (GEST/614.4) recently participated in a one month, two-part fieldwork mission (Feb 16 - March 19, 2007) in Kenya. The first part of fieldwork involved the field survey and ground validation of the recent Rift Valley Fever (RVF) outbreak in East Africa. The fieldwork involved gathering ground data at a variety of sites across Kenya where animal and human cases were reported. The information collected will be used to validate the RVF outbreak forecasts that were issued in October and November 2006. This work was carried out in collaboration with Dr Kenneth Linthicum and a team of entomologists from the USDA Center for Medical, Agricultural & Veterinary Entomology (USDA-CMAVE, Gainesville, Florida) with field support from Major Jason Richardson (US Army Medical Research Unit, Kenya). This work supports a global epidemiologic surveillance and response network of the DoD's Global Emerging Infections Surveillance & Response System (GEIS).

The second part of fieldwork was a service mission to calibrate an array of instruments on a tower supporting the validation of measurements from METEOSAT Second Generation (MSG). This work was carried out in collaboration with Dr. Rasmus Fensholt, Simon Proud (Institute of Geography, University of Copenhagen, Denmark), Ed Pak (SSAI/Code 614.4) and Dr. Christopher Shisanya (Kenyatta University, Nairobi, Kenya) and Kenya Wildlife Service (KWS). The

tower is equipped with several instruments to measure wind speed, air temperature and relative humidity, shortwave and longwave radiation, surface temperature, soil moisture and temperature, and rainfall. Participants are currently analyzing the last one year of data from this location. This site adds to the existing network of MSG validation sites in Senegal, Mali and Sudan.

Publications

Chretien J. P., Anyamba, A., Bedno, S., Breiman, R., Njuguna, C., Sang, S., Sergon, K., Powers, A., Ball, M., Onyango, C., Small, J., and Tucker, C. J., Linthicum, K. J. Drought-associated Chikungunya Emergence along Coastal East Africa. The American Journal of Tropical Medicine and Hygiene, 76(3):405-407, 2007.

Linthicum, K.J. , Anyamba, A., Britch, S.C., Chretien, J.-P., Erickson, R.L., Small , J., Tucker, C.J. , Bennett, K., Mayer, R., Schmidtman , E., Andreadis, T. G., Anderson, J.F., Wilson, W., Freier, J., James, A., Miller, R., Drolet, B.S., Miller, S., Tedrow, C., Bailey, C., Strickman, D., Barnard, D.R., Clark, G.G., and Zou, L.. A Rift Valley fever risk surveillance system for Africa using remotely sensed data: Potential for use on other continents. Veternaria Italiano (Accepted) 2007.

- SIGNIFICANT ACTIVITIES

** Presentation on LDCM Thermal Infrared Sensor (TIRS) Concept to NASA HQ Director of the Earth Science Division:

Jim Irons, LDCM Project Scientist, Code 614.4, and Dr. Rick Allen, University of Idaho, provided a briefing on the TIRS to the NASA HQ Director of the Earth Science Division, Dr. Michael Freilich, and others on Thursday, March 22. Dr. Freilich had asked for information on the scientific rationale for adding a TIRS to the LDCM payload. Irons asked Dr. Allen to help with the briefing as a subject matter expert on the use of Landsat thermal data (from Landsats 5 & 7) for estimating evapotranspiration rates, for assessing the land surface energy balance, and for the monitoring and regulating water use in the U.S. West.

Dr. Freilich was very receptive and perceptive. He remained engaged well beyond the hour scheduled for the briefing. Dr. Allen's contribution was huge. He was able to clearly and concisely address a number of insightful, in-depth questions from Dr. Freilich. Drs. Allen and Irons emphasized that we are in the process of transferring research to operations in the case of Landsat thermal data and that the process would terminate without an LDCM thermal instrument.

Dr. Freilich asked Dr. Irons to follow up with an annotated biography of literature on requirements for thermal data. Dr. Allen and another colleague, Dr. Martha Anderson, USDA Agricultural Research Service, Beltsville Agricultural Research Center, graciously compiled and annotated a bibliography that Irons provided to Dr. Freilich.

** Presentation on LDCM Thermal Infrared Sensor (TIRS) Concept at the GSFC New Business Tag-Up

Jim Irons, LDCM Project Scientist, and Cathy Richardson, TIRS Instrument Manager, provided a briefing on the TIRS at the GSFC New Business Tag-Up meeting on Friday, March 23. The purpose of the presentations was to bring the GSFC new business community up to speed on the status and possibilities for the TIRS concept. The personnel required to support Richardson's ongoing concept studies was a point of discussion.

Presentation on the Status of LDCM and Related Activities to the NASA HQ Science Program Manager for the Carbon and Terrestrial Ecosystems Focus Area

Jim Irons briefed Diane Wickland, the NASA HQ Science Program Manager for the Carbon and Terrestrial Ecosystems Focus Area, and Garik Gutman, NASA HQ LDCM Program Scientist, on the status of the LDCM during their GSFC site visit. Their main purpose for visiting GSFC was to review research conducted by Iron's branch, the Biospheric Sciences Branch that is funded by their programs.